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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,906	08/06/2003	Hiroshi Takeuchi	032879-017	7361

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EXAMINER	
NGUYEN, THANH NHAN P	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 03/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/634,906	TAKEUCHI ET AL.	
	Examiner	Art Unit	
	(Nancy) Thanh-Nhan P Nguyen	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *4,5,8,9,13,14,19 and 20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6,7,10-12 and 15-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is responsive to Amendment dated 1/14/2005.

2. Claims 1-3, 6, 7, 10-12, and 15-18 are elected;

Claims 4, 5, 8, 9, 13, 14, 19, and 20 are cancelled.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arakawa et al U.S. Patent Application Publication No. 2003/0214625 in view of Ichihashi et al JP 2001-091741, and further in view of Kaneko U.S. Patent No. 6,825,902.

Referring to claims 1 and 2, Arakawa et al discloses a retarder comprising a substrate (S) having a longitudinal direction; a first optical anisotropic layer (A); a second optical anisotropic layer (B), [see fig. 3], wherein the optically anisotropic layer formed of a composition comprising a rod-like liquid-crystalline compound, in which the rod-like molecules are aligned homogeneously, [see par. 0137, 0138, 0140].

Arakawa et al lacks disclosure of a first optical anisotropic layer substantially generating a phase difference π at 550 nm, and second optical anisotropic layer substantially generating a phase difference π/2 at 550 nm.

Ichihashi et al discloses the retarder (phase difference plate) comprising a first optically anisotropic layer (A) having substantially π phase difference at 550 nm wavelength and a second optical anisotropic layer (B) having substantially π/2 phase difference at 550 nm wavelength for the benefit of obtaining an extremely thin wide band λ/4 plate, [see abstract]. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have a first optical anisotropic layer substantially generating a phase difference π at 550 nm, and second optical anisotropic layer substantially generating a phase difference π/2 at 550 nm for the benefit of obtaining an extremely thin wide band λ/4 plate.

Arakawa et al also lacks disclosure of an in-plane slow axis of the first optically anisotropic layer and the longitudinal direction of the substrate cross substantially at +30 degrees, which is inherently a rubbing axis of an alignment layer for predetermining an orientation angle of the rod-like molecules in the first optically anisotropic layer and the longitudinal direction of the substrate cross substantially at +30 degrees; an in-plane slow axis of the second optically anisotropic layer and the longitudinal direction of the substrate cross substantially at -30 degrees, which is inherently a rubbing axis of an alignment layer for predetermining an orientation angle of the rod-like molecules in the second optically anisotropic layer and the longitudinal direction of the substrate cross

substantially at -30 degrees; and the in-plane slow axis of the second optically anisotropic layer and the in-plane slow axis of the first optically anisotropic layer cross substantially at 60 degrees.

Kaneko discloses an in-plane slow axis (14a) of the first optically anisotropic layer (14) and the longitudinal direction of the substrate cross substantially at +30 degrees, an in-plane slow axis (13a) of the second optically anisotropic layer (13) and the longitudinal direction of the substrate cross substantially at -30 degrees, and the in-plane slow axis of the second optically anisotropic layer and the in-plane slow axis of the first optically anisotropic layer cross substantially at 60 degrees, [see col. 9, lines 4-11; and figs. 1, 6], for the benefit of making a broad band quarter-wave plate, wherein a retardation represented by retardation value/wavelength = ¼ applies to all wavelength regions, and the effective optical axis thereof is in the direction of the horizontal axis, [see col. 9, lines 15-20]. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have the in-plane slow axis of the first optically anisotropic layer and the longitudinal direction of the substrate cross substantially at +30 degrees, an in-plane slow axis of the second optically anisotropic layer and the longitudinal direction of the substrate cross substantially at -30 degrees, and the in-plane slow axis of the second optically anisotropic layer and the in-plane slow axis of the first optically anisotropic layer cross substantially at 60 degrees for the benefit of making a broad band quarter-wave plate, wherein a retardation represented by retardation value/wavelength = ¼ applies to all wavelength regions, and the effective optical axis thereof is in the direction of the horizontal axis.

Claim 6 is met the discussion regarding claims 1 and 2 rejection above.

Claims 10, 11, 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko U.S. Patent No. 6,825,902 in view of Ichihashi et al JP 2001-091741, and further in view of Arakawa et al U.S. Patent Application Publication No. 2003/0214625.

Referring to claims 10 and 11, Kaneko discloses a circular polarizer comprising a linear polarizer film (11 or 17) having a transparent axis substantially inclined at +45 degrees or -45 degrees relative to a longitudinal direction of a substrate; a first (14) and second (13) optically anisotropic layers wherein an in-plane slow axis of the first optically anisotropic layer and the longitudinal direction of the substrate cross substantially at +30 degrees, which is inherently a rubbing axis of an alignment layer for predetermining an orientation angle of the rod-like molecules in the first optically anisotropic layer and the longitudinal direction of the substrate cross substantially at +30 degrees; an in-plane slow axis of the second optically anisotropic layer and the longitudinal direction of the substrate cross substantially at -30 degrees, which is inherently a rubbing axis of an alignment layer for predetermining an orientation angle of the rod-like molecules in the second optically anisotropic layer and the longitudinal direction of the substrate cross substantially at -30 degrees; and the in-plane slow axis of the second optically anisotropic layer and the in-plane slow axis of the first optically

anisotropic layer cross substantially at 60 degrees, [col. 8, lines 58-61; col. 9, lines4-11, lines 24-27; see figs 1, 5, 6].

Kaneko lacks disclosure of a first optical anisotropic layer substantially generating a phase difference π at 550 nm, and second optical anisotropic layer substantially generating a phase difference π/2 at 550 nm. This limitation is met by Ichihashi et al as discussed above.

Kaneko also lacks disclosure of the optically anisotropic layer(s) formed of a composition comprising a rod-like liquid-crystalline compound, in which the rod-like molecules are aligned homogenously.

Arakawa et al discloses the optically anisotropic layer formed of a composition comprising a rod-like liquid-crystalline compound, in which the rod-like molecules are aligned homogeneously, [see par. 0137, 0138, 0140], for the benefit of having high optical anisotropy, and being able to adjust easily the slow axis of the layer by controlling the alignment of the liquid crystal molecules, [see par. 0015, 0016]. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have the optically anisotropic layer formed of a composition comprising a rod-like liquid-crystalline compound, in which the rod-like molecules are aligned homogeneously for the benefit of having high optical anisotropy, and being able to adjust easily the slow axis of the layer.

Claim 15 is met the discussion regarding claims 10 and 11 rejection above.

Referring to claim 16, Kaneko discloses the first (14) and second (13) optically anisotropic layers are prepared on or above the surface of the substrate and the linear polarizer film (11) is laminated on or above the surface of the substrate, [see fig. 1].

Referring to claim 17, Kaneko discloses the first (14) and second (13) optically anisotropic layers are prepared on or above the surface of the substrate and the linear polarizer film (17) is laminated on or above the rear surface of the substrate, [see fig. 1].

Claims 3, 7, 12, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arakawa et al in view of Ichihashi et al, and Kaneko as discussed above, and further in view of Hsu et al U.S. Patent No. 6,338902.

Referring to claims 3, 7, 12, and 18, Arakawa et al lacks disclosure of at least one of the first and second optically anisotropic layers is formed of a composition comprising a rod-like liquid-crystalline compound denoted by Formula (I) bellow:

Q.sup.1-L.sup.1-Cy.sup.1-L.sup.2-(Cy.sup.2-L.sup.3).sub.n-Cy.sup.3-L.sup.4-Q.sup.2

where Q.sup.1 and Q.sup.2 respectively denote a polymerizable group; L.sup.1 and L.sup.4 respectively denote a divalent linking group, L.sup.2 and L.sup.3 respectively denote a single bond or divalent linking group; Cy.sup.1, Cy.sup.2, and Cy.sup.3 respectively denote a divalent cyclic group; and n is 0, 1 or 2.

Hsu et al discloses the optically anisotropic layer (compensator) is formed of a composition comprising a liquid-crystalline compound denoted by Formula (I) bellow:

Q.sup.1-L.sup.1-Cy.sup.1-L.sup.2-(Cy.sup.2-L.sup.3).sub.n-Cy.sup.3-L.sup.4-Q.sup.2

where Q.sup.1 and Q.sup.2 respectively denote a polymerizable group; L.sup.1 and L.sup.4 respectively denote a divalent linking group, L.sup.2 and L.sup.3 respectively denote a single bond or divalent linking group; Cy.sup.1, Cy.sup.2, and Cy.sup.3 respectively denote a divalent cyclic group; and n is 0, 1 or 2, [see fig. 4], for the benefit of having high performance of improving viewing angle and coloration for a liquid crystal display, [see col. 12, lines 24-26]. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have optically anisotropic layers formed of a composition comprising a rod-like liquid-crystalline compound denoted by Formula (I) as mentioned above for the benefit of achieving high performance of improving viewing angle and coloration for a liquid crystal display.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Arakawa et al U.S. Patent Application Publication No. 2003/0214625 **discloses** a retarder comprising a first optical anisotropic layer; a second optical anisotropic layer, wherein the optically anisotropic layer(s) formed of a composition comprising a rod-like liquid-crystalline compound, in which the rod-like molecules are aligned homogeneously.

Ichihashi et al JP 2001-091741 discloses the retarder (phase difference plate) comprising a first optically anisotropic layer having substantially π phase difference at

550 nm wavelength, and a second optical anisotropic layer having substantially π/2 phase difference at 550 nm wavelength.

Kaneko U.S. Patent No. 6,825,902 discloses a circular polarizer comprising a linear polarizer film having a transparent axis substantially inclined at +45 degrees or -45 degrees relative to a longitudinal direction of a substrate; a first and second optically anisotropic layers wherein an in-plane slow axis of the first optically anisotropic layer and the longitudinal direction of the substrate cross substantially at +30 degrees; an in-plane slow axis of the second optically anisotropic layer and the longitudinal direction of the substrate cross substantially at -30 degrees; and the in-plane slow axis of the second optically anisotropic layer and the in-plane slow axis of the first optically anisotropic layer cross substantially at 60 degrees.

Hsu et al U.S. Patent No. 6,338,902 discloses the compensator is formed of a composition comprising a liquid-crystalline compound denoted by Formula (I) bellow:

Q.sup.1-L.sup.1-Cy.sup.1-L.sup.2-(Cy.sup.2-L.sup.3).sub.n-Cy.sup.3-L.sup.4-Q.sup.2

where Q.sup.1 and Q.sup.2 respectively denote a polymerizable group; L.sup.1 and L.sup.4 respectively denote a divalent linking group, L.sup.2 and L.sup.3 respectively denote a single bond or divalent linking group; Cy.sup.1, Cy.sup.2, and Cy.sup.3 respectively denote a divalent cyclic group; and n is 0, 1 or 2.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to (Nancy) Thanh-Nhan P Nguyen whose telephone number is 571-272-1673. The examiner can normally be reached on M-F/9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

March 2, 2005
TN

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